

**TOSHIBA**



**TOSHIBA AMERICA INFORMATION SYSTEMS  
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**MK2008GAL (HDD1662)  
1.8-INCH HARD DISK DRIVE  
USER MANUAL**

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## INTRODUCTION – MK2008GAL (HDD1662) HARD DISK DRIVE

### General Features

- 1.8" sized drive
- 1 Platter
- 20 Gigabytes\*
- 5mm High
- 15ms Average Seek Time
- ATA-6 Interface
- Ultra DMA 100
- 2Mbytes Buffer
- Rotational speed of 4,200rpm
- MTTF 300,000 Hours

*\*Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.*

## SETUP – MK2008GAL (HDD1662) HARD DISK DRIVE



**Caution:** Your Hard Disk Drive is a precision device and even a small drop onto any surface can cause damage. Electrostatic discharge can also damage the drive. You should ground yourself prior to handling the drive.



*Figure 1. MK2008GAL Side View*

### Installation Notes

- Do not apply any force to the top cover, except the screw areas on top cover. Maximum force to the specified area is 2N.



**important Note:** *Disconnect power from your computer system before beginning installation*

## USING THE HARD DISK DRIVE – MK2008GAL (HDD1662) HARD DISK DRIVE

### **Backing up Data Files**

To avoid data loss, regularly back up the data files on the hard disk drive.

## SPECIFICATIONS – MK2008GAL (HDD1662) HARD DISK DRIVE

### General

Model	MK2008GAL (HDD1662)
Interface	ATA-6

### Functionality

Formatted Capacity	20.0GB*
Rotational Speed	4200rpm
Avg. Rotational Latency	7.14/ms
Spin-up Time	3.5sec (typical)
Buffer	2Mbytes
Seek Time	
Average	15
Maximum	26
Internal Transfer Rate	132.6 ~ 230.9 Mbits/sec (max)
Host Transfer Rate	
Ultra DMA mode	100Mbytes/sec
PIO Mode	16.6Mbytes/sec
Interleave Factor	1:1

*\*Toshiba defines a megabyte (MB) as 1,000,000 bytes and a gigabyte (GB) as 1,000,000,000 bytes.*

### Internal Drive Characteristics

Number of Disks	1
Number of Data Heads	2
Track Density (TPI)	4,704 (119.5k)
Logical Cylinders	16,383
Logical Heads	16
Logical Sectors/track	63
Bytes per Sector	512
Logical Blocks (LBA)	39,063,024

### Reliability

Preventative maintenance	None
Non-recoverable read errors	1 error per 10 <sup>13</sup> bits read

### Electrical

Voltage	3.3V 5%
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### Power Consumption

Start	1.8W typ
Seek	1.1W typ
Read/Write	1.0W typ
Sleep	0.07W typ
Energy Consumption Efficiency	0.015W/GB avg
Shock	
Operating	4,900m/s <sup>2</sup> (500G)(2msec)
Non-Operating	14,700m/s <sup>2</sup> (1500G)(1msec)

## Physical

Height	0.2" (5.0mm)
Width	2.13" (54.0mm)
Depth	2.79" (71.0mm)
Weight	1.7oz (48g) typ

## Regulatory

The drive satisfies the following standards:

Underwriters Laboratories (UL)	1950
Canadian Standard Association (CSA)	C22.2 No. 950
TUV Rheinland	EN 60 950
BSMI	3902C799

## DRIVE CONNECTORS – MK2008GAL (HDD1662) HARD DISK DRIVE

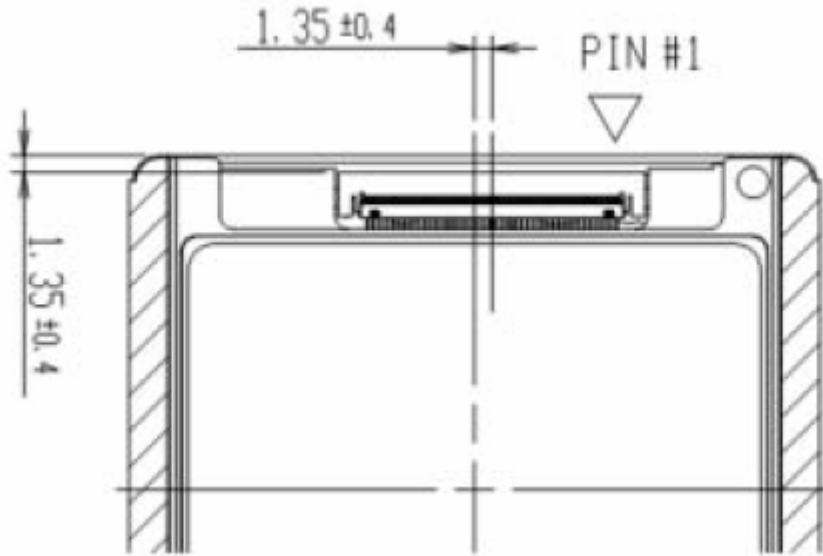


Figure 1. MK2008GAL HDD - INTERFACE CONNECTOR

Drive Side Connector	DDK Ltd, FF19A-40B-R11b
Recommended host side FPC	<ol style="list-style-type: none"> <li>1. Width: 20.50 ± 0.07mm</li> <li>2. Thickness: 0.20 ± 0.03mm</li> <li>3. Length: 90mm (max)</li> <li>4. Impedance: Typical 50ohm</li> <li>5. Plating: Gold over Nickel plating (note 1)</li> <li>6. Adhesive: Heat-hardened adhesive</li> </ol>
Connector Durability (note 2)	20 times
FPC Holding force (note 3)	Typ: 17[N] Min: 5[N]
<p>* Do not pull out FPC with the connector locked.            * Do not lock without FPC</p> <p>Notes:</p> <ol style="list-style-type: none"> <li>1. To avoid Sn whisker</li> <li>2. In horizontal direction with FPC of 0.20mm in thickness and with the same connector and FPC</li> <li>3. In horizontal direction with FPC of 0.20mm in thickness and with the same connector and FPC after pulling out repeatedly</li> </ol>	



## Interface Signals

DRIVE INTERFACE SIGNALS			
PIN	SIGNAL	PIN	SIGNAL
1	RESERVED	2	RESERVED
3	- RESET	4	GROUND
5	DD 7	6	DD 8
7	DD 6	8	DD 9
9	DD 5	10	DD 10
11	DD 4	12	DD 11
13	DD 3	14	DD 12
15	DD 2	16	DD 13
17	DD 1	18	DD 14
19	DD 0	20	DD 15
21	GROUND	22	DMARQ
23	GROUND	24	-DIOW/STOP
25	- DIOR/ - HDMARDY HSTROBE	26	GROUND
27	IORDY/ - DMARDY/ DSTROBE	28	GROUND
29	DMACK	30	INTRQ
31	DA1	32	- PDIAG/-CBLID
33	DA0	34	DA 2
35	- CS0	36	CS1
37	- DASP	38	+3.3V
39	+3.3V	40	RESERVED

*Note: Symbol (-) in front of signal indicates negative logic.*